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MANDEL & ADRIANO
55 SOUTH LAKE AVENUE
SUITE 710
PASADENA, CA 91101

| EXAMINER | |
|---|---|
| GARVEY, TARA L | |
| **ART UNIT** | **PAPER NUMBER** |
| 1636 | |

DATE MAILED: 05/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/797,371 | KATZ ET AL. | |
| | Examiner | Art Unit | |
| | Tara L. Garvey | 1636 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *13 February 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-13, 36-42, 44, 45, 47-65, 73, 74, 77-79, 132-168* is/are pending in the application.

4a) Of the above claim(s) *1-13,36-38,49-56,58-65,73,74,77-79,132-159,163-168* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *39-42, 44, 45, 47, 48, 57 and 160-162* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *11/14/05, 3/27/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

Claims 1-13, 36-42, 44, 45, 47-65, 73, 74, 77-79, 132-168 are pending. Claims 1-13,36-38,49-56,58-65,73,74,77-79,132-159,163-168 are withdrawn from consideration. Claims 2, 14-35, 43, 46, 66-72, 75, 76 and 80-131 are cancelled. Receipt of an amendment filed on February 13, 2006 is acknowledged in which claims 43 and 46 were cancelled and claims 39, 40, 45, 160 and 162 were amended.

### *Response to Arguments*

Priority

Receipt of an amendment to the first paragraph of the specification in which the claim to priority was updated is acknowledged. Claims 161 and 162 are granted priority to PCT/US00/06232 with a filing date of March 10, 2000. The provisional applications 60/123,711 and 60/162,462 do not disclose that the adipose derived stem cells of the invention can be grown in conditioned media or in co-culture with another cell.

Claim Rejections - 35 USC § 102

The rejection of claims 39-42, 44-45, 47 and 57 under 35 U.S.C. 102(b) as being anticipated by Zuk et al (Molecular Biology of the Cell, December 2002, volume 13, pages 4279-4295 as referenced on the IDS of June 24, 2005) is withdrawn.

The rejection of claims 39, 40, 43, 47, 48 and 57 are rejected under 35 U.S.C. 102(b) as being anticipated by Wilkison et al (US 2001/0033834) is withdrawn in view of applicant's amendment.

The rejection of claim 160 under 35 U.S.C. 102(b) as being anticipated by Ailhaud et al (Diabete and Metabolisme (1983) volume 9, pages 125-133; as referenced in the IDS submitted on June 24, 2005) is withdrawn in view of applicant's amendment.

The rejection of claim 162 under 35 U.S.C. 102(e) as being anticipated by Gimble et al (US 6,555,374) is withdrawn in view of applicant's amendment.

Claim Rejections - 35 USC § 103

The rejection of claims 39-48 and 57 under 35 U.S.C. 103(a) as being unpatentable over Wilkison et al (US 2001/0033834) in view of Halvorsen et al (US 6,429,013), Halvorsen et al (US 2002/0119126) and Gimble (US 6,555,374) is withdrawn in view of applicant's amendment.

The rejection of claims 160-161 under 35 U.S.C. 103(a) as being unpatentable over Ailhaud et al (Diabete and Metabolisme (1983) volume 9, pages 125-133; as referenced in the IDS submitted on June 24, 2005) in view of Golde et al (US 4,438, 032) is withdrawn in view of applicant's amendment.

Claim Rejections - 35 USC § 112

Claim 39 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for differentiation of adipose-derived stem cells in some morphogenic medium such as adipogenic, osteogenic, chondrogenic, myogenic and embryonic, does not reasonably provide enablement for differentiation of adipose-derived stem cells into any cell type in any morphogenic medium is withdrawn in view of applicant's amendment.

Double Patenting

The rejection of claims 160-162 are provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 35-37 of copending Application Numbers 10/845,315 and 10/740,315 is withdrawn in view of the amendment to the claims in all applications.

## New Grounds of Rejection

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 39-42, 44, 45, 47, 48, 57 and 160-162 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims are drawn to a method of differentiating an isolated adipose derived stem cell into two or more of a fat cell, a bone cell, a cartilage cell and a muscle cell comprising culturing the cells in adipogenic, osteogenic, chondrogenic or myogenic medium.

The specification does not define the distinguishing characteristics of a stem cell that is derived from adipose tissue. The specification describes methods on how to

isolate stem cells from adipose tissue such as lipoaspirate obtained via liposuction and then further teaches that the cell derived from the adipose tissue is any type of stem cell of mesodermal origin and has the capacity to develop into mesodermal tissue. The prior art does not appear to offset the deficiencies in the specification in that it does not describe all the distinguishing characteristics of the stem cell isolated and derived from adipose tissue that is capable of differentiating into and functioning as a mesodermal cell. Therefore, there is not a structural and functional relationship provided by the prior art or the specification for one of skill in the art to envision all characteristics of the adipose derived stem cell that allow it to function as a stem that can develop into any mesodermal tissue.

*Vas-Cath Inc. v. Mahurkar*, 19USPQ2d 1111, clearly states "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of *the invention*. The invention is, for purposes of the 'written description' inquiry, *whatever is now claimed*." (See page 1117.) The specification does not "clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is now is claimed." (See *Vas-Cath* at page 1116). As discussed above, the skilled artisan cannot envision the detailed chemical structure of the encompassed genus of polynucleotides, and therefore conception is not achieved until reduction to practice has occurred, regardless of the complexity or simplicity of the method of isolation or identification. Adequate written description requires more than a mere statement that it is part of the invention and reference to a potential method of isolating it. The compound itself is required. See *Fiers v. Revel*, 25USPQ2d 1601 at

1606 (CAFC 1993) and *Amgen Inc. v. Chugai Pharmaceutical Co. Ltd.*, 18USPQ2d 1016.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 39-42, 44, 45, 47, 48, 57 and 160-162 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The metes and bounds of the claimed subject matter are not defined. The word "derived" is unclear since it does not define the scope of the limitations. Without a clear statement of the process by which the starting material is derivatized it is not possible to know the metes and bounds of such a limitation because any given starting material can have many divergent derivatives depending on the process of derivatization.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 39, 40, 41, 45, 57 and 160 are rejected under 35 U.S.C. 102(e) as being anticipated by Halvorsen et al (US 2002/0119126; made of record in the office action mailed August 9, 2005).

Claims 39, 40, 41, 45, 57 and 160 are drawn to a method of differentiating an isolated adipose-derived stem cell into cells of any two or more cells selected from a fat cell, a bone cell, a cartilage cell and a muscle cell comprising culturing the cell in any adipogenic, osteogenic, chrondrogenic or myogenic morphogenic medium under conditions for the cell to differentiate.

Halvorsen et al teach a method of differentiating adipose-derived stromal cells that comprises culturing the cells in a stromogenic, an osteogenic or adipogenic medium and then analyzing the cells for osteoblast properties or adipocyte properties. The cells are cultured in vitro and can then be implanted in vivo for further differentiation (abstract, page 2, right column, page 3, page 4, paragraphs 0033-0034 and 0041 and pages 5-6, Example 2). Thus, Halvorsen et al teaches all that is recited in the instant claims.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 161 is rejected under 35 U.S.C. 103(a) as being unpatentable over Halvorsen et al (US 2002/0119126; made of record in the office action mailed August 9, 2005) in view of Golde et al (US 4,438, 032; made of record in the office action mailed August 9, 2005).

Halvorsen et al has been described previously.

Halvorsen et al does not teach using a conditioned medium of a specific cell type for the differentiation.

Golde et al teach culturing stem cells in a conditioned medium to differentiate the cells into a desired cell type (column 6, lines 45-56).

It would have been obvious to one or ordinary skill in the art to modify the teachings of Halvorsen et al to differentiate the cells in a conditioned medium because Halvorsen et al teaches that adipose-derived stromal cells can be differentiated into adipocytes and osteoblasts and Golde et al demonstrate that stem cells can be differentiated into a particular cell type using a conditioned medium. One would have

been motivated to do so in order to receive the expected benefit, as suggested by Halvorsen et al and actually exemplified by Golde et al, of differentiating adipose-derived stromal cells in a conditioned medium. Absent of any evidence to the contrary, there would have been reasonable expectation of success in differentiating adipose-derived stromal cells in conditioned medium since other pluripotent cells have been differentiated successfully using conditioned medium.

Claim 162 is rejected under 35 U.S.C. 103(a) as being unpatentable over Halvorsen et al (US 2002/0119126; made of record in the office action mailed August 9, 2005) in view of Gimble et al (US 6,555,374; made of record in the office action mailed August 9, 2005).

Halvorsen et al has been described previously.

Halvorsen et al does not teach co-culturing the cell with a cell of desired lineage.

Gimble et al teach a method of differentiating an adipose derived stromal cell into a hematopoietic supporting stromal cell by co-culture with hematopoietic cells (column 6, lines 3-16, column 7, lines 59-61, columns 14-17, Examples 2-5).

It would have been obvious to one or ordinary skill in the art to modify the teachings of Halvorsen et al to differentiate the cells in a conditioned medium because Halvorsen et al teaches that adipose-derived stromal cells can be differentiated into adipocytes and osteoblasts and Gimble et al demonstrate that adipose derived stromal cells can be differentiated into a particular cell type by co-culture with a desired cells type. One would have been motivated to do so in order to receive the expected benefit,

as suggested by Halvorsen et al and actually exemplified by Gimble et al, of differentiating adipose-derived stromal cells by co-culture with a desired cell type. Absent of any evidence to the contrary, there would have been reasonable expectation of success in differentiating adipose-derived stromal cells using a co-culture with a desired cell type as taught by Gimble et al.

***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 39-42, 44, 45, 67, 48 and 160 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 58-60, 67, 76-78, 80, 81, 83 and 84 of copending Application No. 10/845,315. Although the conflicting claims are not identical, they are not patentably distinct from each other

because the claims from both applications are drawn to a method of differentiating isolated adipose-derived stem cells (ADSC) into adipose cells, bone cells, muscle cells, cartilage which are mesodermal cells by culturing the isolated ADSC in adipogenic, osteogenic, myogenic or chondrogenic medium.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

***Conclusion***

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tara L Garvey whose telephone number is (571) 272-2917. The examiner can normally be reached on Monday through Friday 8 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Remy Yucel can be reached on (571) 272-0781. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to (571) 272-0547.

Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) (http://pair-direct.uspto.gov) can now contact the USPTO's Patent Electronic Business Center

(Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system provides Internet-based access to patent application status and history information. It also enables applicants to view the scanned images of their own application file folder(s) as well as general patent information available to the public.

For all other customer support, please call the USPTO Call Center (UCC) at 800-786-9199.

Tara L Garvey, Ph.D.
Examiner
Art Unit 1636

TLG

CELINE QIAN, PH.D.
PRIMARY EXAMINER